

AMENDMENTS TO THE CLAIMS

Please amend claims 1-31 as follows. The following listing of claims replaces all prior versions and listings of claims in this application:

1.. (Currently Amended) A method for determining a deployment level of an airbag in a vehicle, the method comprising the following steps:

(a) repeatedly capturing three-dimensional depth images of a scene that includes a region of a vehicle seat;

(b) repeatedly determining occupancy information from the at least one of said three-dimensional captured depth images;

(c) upon occurrence of an airbag-deployment triggering event that triggers deployment of the airbag, performing repeating step (a) and step (b) more frequently than before occurrence of said airbag-deployment triggering event; the steps of capturing depth images of the scene and determining occupancy information more rapidly than before when deployment of the airbag is triggered; and

(d) indicating the airbag deployment level of the airbag based at least in part on the occupancy information determined after occurrence of the said airbag-deployment triggering event.

2. (Currently Amended) The method of claim 1, wherein step (b) determining occupancy information includes determining position information of an occupant on the said vehicle seat.

3. (Currently Amended) The method of claim 1, wherein step (b) the step of determining occupancy information includes determining where a designated component of the said occupant is in relation relative to an area from which the said airbag is to be deployed.

4. (Currently Amended) The method of claim 3, wherein the step of determining where a designated component of the occupant is includes determining where at least

one of a head or and torso of the said occupant is in relation to the relative to said area from which the said airbag is to be deployed.

5. (Currently Amended) The method of claim 1, further comprising the step of including classifying the said object from at least one of said one or more of the captured depth Images.

6. (Currently Amended) The method of claim 5, wherein the step of classifying the said object from at least one of said one or more of the captured depth images is performed triggered deployment of said airbag, before when deployment of the airbag is triggered.

7. (Currently Amended) The method of claim 6, wherein the step of classifying the said object from at least one of said one or more of the captured depth images is performed immediately after start-up of said vehicle start up.

8. (Currently Amended) The method of claim 1, wherein a single occurrence of step (a) and step (b) and step (c) requires less than about 100 ms, the step of performing the steps of capturing depth images of the scene and determining occupancy information more rapidly occurs of the order of less than 100 milliseconds.

9. (Currently Amended) The method of claim 1, wherein at least one of step (a), step (b) and step (c) the step of performing the steps of capturing depth images of the scene and determining occupancy information more rapidly includes capturing at least one depth image one or more depth images with lower resolution than was used before occurrence of said airbag-deployment triggering event, the event that triggers deployment of the airbag.

10. (Currently Amended) The method of claim 1, wherein step (d) of indicating the deployment level of the airbag based at least in part on the occupancy information

includes lowering the deployment level because the when said occupant is less than a maximum distance from an area from which the said airbag is to be deployed.

11. (Currently Amended) The method of claim 1, wherein step (d) of indicating the deployment level of the airbag based at least in part on the occupancy information includes maximizing the deployment level because the when said occupant is a maximum distance from an area from which the said airbag is to be deployed.

12. (Currently Amended) The method of claim 1, wherein step (b) the step of determining occupancy information includes determining a pose of the said occupant.

13. (Currently Amended) The method of claim 12, wherein the step of determining a pose of the said occupant includes determining whether an extremity of the said occupant is extended towards an area from which the said airbag is to be deployed.

14. (Currently Amended) The method of claim 1, wherein step (d) of indicating the deployment level of the airbag based at least in part on the occupancy information includes disabling airbag deployment of the airbag because the when said occupant is too close to from an area from which the said airbag is to be deployed.

15. (Currently Amended) A three-dimensional sensor system for determining to determine a deployment level of an airbag in a vehicle, the sensor system comprising:

a light source to emit that emits light onto a scene that includes a vehicle seat to be protected by said for the airbag when said vehicle seat is occupied;

an array of light-sensitive pixels disposed to capture which capture reflected light from the said scene, including reflected light that originated from the including light emitted by said light source, such that in at least one scene capture, three-dimensional data representing said scene are captured;

processing resources that to determine depth information for an object in the said

scene based ~~on-a upon at least one~~ time-of-flight characteristic of the reflected light emitted by said that originates from the light source and is captured ~~on-the by said~~ array, ~~said and wherein~~ the processing resources are configured to determine occupancy data for the ~~said~~ object based ~~upon on-the~~ captured reflected light from the ~~said~~ scene ~~captured by said array~~, and ~~wherein the processing resources are~~ configured to determine ~~the deployment level of the airbag deployment level~~ based at least in part ~~upon on the~~ occupancy data, ~~responsive in response~~ to receiving data indicating occurrence of a collision of the ~~said~~ vehicle occurred.

16. (Currently Amended) The sensor system of claim 15, wherein ~~the said~~ processing resources are ~~configured to communicate airbag deployment level, responsive to data indicating occurrence of a collision of said vehicle, to an airbag actuating device. indicate to another device that actuates the airbag the deployment level of the airbag, in response to the data indicating the collision of the vehicle occurred.~~

17. (Currently Amended) The sensor system of claim 15, wherein ~~the said~~ light source emits a modulated infrared light ~~source~~.

18. (Currently Amended) The sensor system of claim 17, wherein ~~the said~~ time-of-flight characteristic includes a phase shift between ~~the~~ modulated light emitted from ~~the said~~ light source and ~~the~~ reflected modulated light captured ~~on-the by said~~ array of light-sensitive pixels.

19. (Currently Amended) The sensor system of claim 15, wherein ~~the said~~ array of light-sensitive pixels are ~~is formed on part of~~ a complementary metal oxide semiconductor device.

20. (Currently Amended) The sensor system of claim 15, wherein ~~the said~~ processing resources are configured to determine occupancy classification based on

capture by said array of light-sensitive pixels of reflected light emitted by said from the
light source captured on the array of light sensitive pixels.

21. (Currently Amended) The sensor system of claim 20, wherein the occupancy classification includes at least a first class which accommodates including an adult, a second class which accommodates including at least one of a child or and a child seat, and a third class representing absence of any which corresponds to no occupant.

22. (Currently Amended) The sensor system of claim 20, wherein the said
sensor system determines processing resources are configured to determine
occupancy classification based on reflected light from the said light source captured on
the said array of light-sensitive pixels.

23. (Currently Amended) The sensor system of claim 15, wherein the said
processing resources are configured to determine occupant position relative to a site
from which the said airbag is deployed using reflected light from the said light source
captured on the said array of light-sensitive pixels.

24. (Currently Amended) The sensor system of claim 21, wherein the said
processing resources are configured to signal data indicating at least one of a partial
deployment level or and zero deployment level based on the occupancy classification in
response to the responsive to data indicating the collision of the said vehicle has
occurred.

25. (Currently Amended) The sensor system of claim 23, wherein the said
processing resources are configured to signal data indicating at least one of a partial
deployment level or and a zero deployment level based on the occupancy position in
response to the responsive to data indicating the collision of the said vehicle has
occurred.

26. (Currently Amended) The sensor system of claim 23, wherein the said processing resources are configured to identify a tracking feature of the said occupant in order so as to track the said occupant relative to the a site from which the said airbag is deployed.

27. (Currently Amended) The sensor system of claim 23, wherein the said processing resources are configured to identify a tracking feature of the said occupant based on scene-reflected light from the scene that is captured on the said array of light-sensitive pixels.

28. (Currently Amended) The sensor system of claim 15, further comprising an optical filter for filtering to filter ambient light from reflected light in a from the scene that is captured on the said array of light-sensitive pixels.

29. (Currently Amended) The sensor system of claim 28, wherein the said optical filter is configured to for low incidence angles so that the optical filter maintains to maintain a relatively narrow interference band.

30. (Currently Amended) The sensor system of claim 20, further comprising an electrical noise reduction filter to enhance sensitivity of individual pixels in the said array of pixels.

31. (Currently Amended) The sensor system of claim 30, further comprising a common more rest common mode reset circuit coupled to said that combines with the array of pixels to at least reduce in order to avoid pixel saturation.